REVISED PERIMETER AIR MONITORING PLAN FOR BELOW GRADE DEMOLITION AND REMEDIATION ACTIVITIES

Former Pechiney Cast Plate, Inc. Facility

Vernon, California

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Former Pechiney Cast Plate, Inc. Facility
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This report was prepared by the staff of AMEC Geomatrix, Inc., under the supervision of the Geologist(s) and/or Engineer(s) whose signature appears hereon.

The findings, recommendations, specifications, or professional opinions are presented within the limits described by the client, in accordance with generally accepted professional engineering and geologic practice. No warranty is expressed or implied.

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Former Pechiney Cast Plate, Inc. Facility
3200 Fruitland Avenue
Vernon, California

1.0 INTRODUCTION

On behalf of Pechiney Cast Plate, Inc., AMEC Geomatrix, Inc. (AMEC; formerly Geomatrix Consultants, Inc. [Geomatrix]), has prepared this revised Perimeter Air Monitoring Plan (Plan) for the implementation of the below-grade demolition and remediation activities at the former Pechiney Cast Plate, Inc., Facility located in Vernon, California (the Site; the Vernon facility). The objective of this revised Plan is to provide the procedures necessary to conduct Site perimeter monitoring of the below-grade demolition and remedial activities to monitor the effectiveness of contractor dust and odor control measures and to gather information on particulate matter less than 10 microns (PM_{10}) particulate; lead; arsenic; polychlorinated biphenyls (PCBs); trichloroethene (TCE); tetrachloroethene (PCE); benzene; 1,2,4-trimethylbenzene (1,2,4-TMB); and 1,3,5-trimethylbenzene (1,3,5-TMB) emissions at the Site perimeter. Based on samples of concrete and soil, these are the key chemicals of concern that may be present in emissions during below-grade demolition and/or remedial activities.

The Plan was initially updated in January 2007 to include the below-grade demolition and remediation work, and again in 2011 to focus on below-grade demolition and remediation activities and to address the United States Environmental Protection Agency's (U.S. EPA's) condition regarding seasonal wind rose diagrams. This Plan will be used in conjunction with the Remedial Action Plan (RAP) (AMEC, 2011a), Below Grade Demolition Plan (Geomatrix, 2006), below-grade technical specification, and other related documents for this project.

This Plan does not cover air monitoring for on-site workers. Worker exposure monitoring is the responsibility of the demolition contractors performing the demolition and remediation work. An AMEC Site-specific Health and Safety Plan (HASP) has been prepared for monitoring potential exposure of AMEC employees (AMEC, 2011b).

2.0 SITE BACKGROUND

The Vernon facility is located at 3200 Fruitland Avenue in Vernon, California, on an approximate 26.9 acre parcel (Figure 1). The Vernon facility formerly consisted of office and manufacturing buildings that occupied approximately 600,000 square feet of the Site. The remaining areas are parking lots, outside storage areas, and partially paved vacant lots. The facility is surrounded by a fence with the Site entrance located on Fruitland Avenue.

2.1 SITE HISTORY

Aluminum Company of America's (Alcoa's) operations at the facility reportedly began in 1937. In 1997, Alcoa sold the eastern half of its facility, which subsequently was razed, subdivided, and redeveloped as industrial and commercial properties. In December 1998, Alcoa sold the western portion of the facility (3200 Fruitland Avenue) to Century Aluminum Company. In 1999, Pechiney Cast Plate, Inc. purchased the Site.

The facility was used to manufacture high-precision cast aluminum plates and is situated within an area zoned for industrial and commercial use. The facility is no longer in operation.

2.2 CHEMICALS OF POTENTIAL CONCERN

Chemicals of potential concern (COPCs) associated with the below-grade demolition and remediation activities include PCBs, metals (specifically lead and arsenic as well as other metals), and volatile organic compounds (VOCs) detected in soil at the Site. PCB concentrations in concrete at isolated locations within the footprint of former Buildings 104, 106, and 108 exceeded screening levels for human health. PCB concentrations in soil at isolated locations within former Buildings 104 and 106, and in the area of the former hot well, storm water outfall #6, and former storm water outfall #7 exceeded screening levels for human health. TCE and PCE were the primary VOCs detected in soil vapor and soil at the Site above screening levels for human health and/or potential impact to groundwater within former Buildings 106, 108, and 112. Metals, with the exception of arsenic, detected in soil did not exceed screening levels and/or background concentrations; however, soluble concentrations of some metals exceeded hazardous waste criteria. Stoddard solvent concentrations in the vicinity of former Building 112A and the former Stoddard solvent underground storage tanks (USTs) were detected at levels above screening for human health.

The primary contaminants to be monitored for during below grade demolition and remediation activities are PCBs, lead, and arsenic, with the addition of PCE and TCE for below-grade work in the former Buildings 106, 108, and 112 areas. Benzene, 1,2,4-TMB, and 1,3,5-TMB will be used as indicators for Stoddard solvent emissions for work in the area of former Building 112A and other Stoddard solvent-impacted areas, since these compounds represent some of the more toxic constituents and/or more prevalent constituents in Stoddard solvent.

A small quantity of transite piping, known to contain asbestos, is present in a below grade vault and will be abated prior to vault demolition. Asbestos is not included in this perimeter air monitoring program since air monitoring and sampling for asbestos materials will be the responsibility of a third party Certified Asbestos Consultant who will provide asbestos abatement oversight of the contractor during performance of that work.

Although not required by South Coast Air Quality Management District (SCAQMD), dust measured as PM_{10} will be measured to monitor compliance with SCAQMD Rule 403 and to determine the effectiveness of contractor dust mitigation measures. Samples for PCBs; lead; arsenic; PCE; TCE; benzene; 1,2,4-TMB; and 1,3,5-TMB will be collected to evaluate potential concentrations of these key contaminants in air dispersing from activities at the Site.

3.0 PERIMETER AIR MONITORING

The proposed perimeter air monitoring activities that are addressed in this Plan consist of three general categories of work:

- Below Grade Structure Demolition – Removal of former building slabs and deeper structural features such as foundations, footings, and pits.
- Soil Remediation – Limited soil excavation, stockpiling and loading for off-site disposal.
- Concrete Crushing – Sizing, stockpiling and crushing concrete demolition debris containing PCBs at concentrations below the remediation goal, for use as backfill during Site grading activities.

3.1 MONITORING PARAMETERS

Perimeter air monitoring will include the following key potential emissions from the project activities during slab demolition and removal, deeper structure removal, and soil remediation:

- Dust measured as PM_{10};
- Lead and arsenic; and
- PCBs.

Additional constituents listed below will be included during perimeter air monitoring in specific areas of the Site during below grade structure removal and soil remediation and include:

- PCE and TCE in the areas of former Buildings 104, 108, and 112; and
- Benzene, 1,2,4-TMB, and 1,3,5-TMB in the area of former Building 112A and the former Stoddard solvent USTs.

3.2 SELECTION OF MONITORING LOCATIONS

Perimeter air sampling will be conducted to quantify airborne concentrations of PM_{10}, lead, PCBs (and VOCs during soil remediation) at one upwind and two downwind locations during project activities. Monitoring locations will be determined by a review of existing wind rose data, and from an on-site meteorological station that will be established at the Site prior to the start of below grade demolition activities.

Recent seasonal meteorological data for the City of Vernon or from SCAQMD are not available. The nearest meteorological station with publicly available wind rose data is located at Los Angeles International Airport (LAX), approximately 12 miles southwest of the Site, and may not be representative of the Site conditions. The City of Vernon developed wind rose data for the Malburg Power Generation Station in 1981. This information is available at the California Energy Commission website (http://energy.ca.gov/). Because the Malburg Power Generation Station is located two blocks from the Site, the wind rose data from this facility would be representative of the meteorological conditions at the Site. Therefore, wind direction and proposed perimeter air sampling locations identified for the Site are based on season-specific wind rose diagrams from the 1981 data developed for the Malburg Generating Station. As shown on the wind rose diagrams provided as Appendix A, the predominant wind direction is from west to east, regardless of the season. This west to east direction is consistent with the 1981 wind rose diagram published by SCAQMD. Based on these diagrams, the pre-designated upwind and downwind sampling locations were selected along the western and eastern property boundary to facilitate sample tracking. Two additional monitoring locations are also included along the northern property boundary along Fruitland Avenue and may be used during performance of work in the northern portion of the Site, because the wind direction occasionally originates seasonally from the south during portions of the day.

Additionally, the upwind and downwind sample locations will be verified daily based on the actual wind direction measured at the on-site meteorological station.

During the below grade demolition and remediation work, one upwind and two downwind sampling locations will be monitored throughout the project for a set of site-specific parameters (PM_{10}, lead, arsenic, PCBs, TCE, PCE, benzene and TMB). Monitoring locations will be determined by a review of existing wind rose data, work areas, and from an on-site meteorological station that will be established at the Site prior to the start of below grade demolition activities. Based on the predominant wind direction for the Site, two downwind locations will be located on the eastern boundary of the Site at least 200 feet apart when monitoring occurs. The upwind and downwind locations will move over the course of the project and will be placed in proximity to the most intense project work for that particular day. For example, below grade demolition is anticipated to move from north to south so monitoring stations will be moved to the pre-designated locations from north to south as demolition progresses. The predominant wind direction in the vicinity of the Site is shown on Figure 2, and the designated sample locations and identifiers are shown on Figure 3. During soil excavation work in VOC areas, an additional cross-wind location will be monitored along the southern Site perimeter for ambient conditions based on the presence of an industrial cleaning facility located upwind in close proximity to the Site.

3.3 AIR SAMPLING EQUIPMENT

Perimeter air monitoring data will be collected using time-integrated air sampling devices followed by subsequent analytical laboratory analyses, and continuous reading real-time monitors. Perimeter air samples will be collected using the sampling devices listed below.

3.3.1 Time-Integrated Sampling

Time-integrated sampling will be obtained with the following equipment:

- PM_{10} air samples will be collected using PQ-100 or PQ-200 portable air samplers equipped with PM-10 inlets. The same sample collection devices and filters will be used for lead and arsenic. The PQ-100/200 samplers are approved by the U.S. EPA as portable samplers. The flow rate for the PQ-100/200 sampler will be set at 16.7 liters per minute (Lpm) and samples will be collected on 47 millimeter (mm) diameter Teflon filters.

- PCB samples will be collected using polyurethane foam (PUF) cartridges and a low flow sampling pump with a flow rate of approximately 5 Lpm.

- VOCs will be collected using 6-Liter (L) Summa™ canisters fitted with a flow control regulator.

3.3.2 Real-Time Monitoring

- Real-time air monitoring will be performed with the following direct-reading hand-held equipment. Personal data monitors such as the pDR-1000 (also known as a MiniRAM) will be used to monitor real time dust levels in ambient air at one upwind and two downwind locations alongside the PQ-100/200 time integrated samplers.

- Photoionization detectors (PID) will be used to check real-time ambient VOC levels at regular intervals.

3.4 MONITORING FREQUENCY

Real time air monitoring by pDR-1000 and PID will be conducted every day throughout the duration of Site remediation. PIDs will be employed by the contractor for monitoring of the breathing zone and while performing SCAQMD Rule 1166 monitoring on a daily basis during work in VOC-affected soils. Real time data also will be used daily to determine the effectiveness of the contractor's engineering controls for mitigation of fugitive dust and VOC emissions. Time integrated air samples will be collected at a minimum of 1 day per week for the entire work day period (approximately 8 hours from 7 am to 3 pm) or longer if necessary. Time integrated air samples will only be collected over an entire work day since air samples collected for less than 8 hours may not achieve the necessary project detection limits. Time integrated samplers will not be moved once the sampling period has commenced during the sampling period each day. At each air sampling station, the sampling devices will be set up with the air intakes elevated approximately 5 to 6 feet above the ground surface to collect a representative breathing zone sample. To the extent feasible, air samplers will be located away from large objects that may interfere with air movement near the sampler inlet. At the completion of the sampling period, the sampling media will be uniquely labeled using the station identifiers, analyte, and the date. For example, identifier 1PCB-053110 would be used for a PCB sample at Station 1 on May 31, 2010. Abbreviations for analytes will be: PM_{10} for particulates, Pb for lead, As for arsenic, PCB for PCBs, and VOC for VOCs. The samples will be individually packaged and shipped to a U.S. EPA-accredited laboratory for analysis.

3.5 MONITORING DETECTION LIMITS AND ANALYTICAL TURNAROUND TIMES

Laboratory detection limits in terms of air concentration will vary depending on how long the samplers are operated. PM_{10} particulate weight will be determined gravimetrically by National Institute for Occupational Safety and Health (NIOSH) Method 0500. Lead and arsenic will be analyzed by NIOSH Method 7300. The expected limits of detection are 0.2 micrograms per filter (µg/filter) for lead, 0.4 µg/filter for arsenic, and 1 µg/filter for PM_{10}. Using the PQ-100/200 samplers at a flow rate of 16.7 Lpm for an 8-hour workday, this equates to detection limits of 0.025 micrograms per cubic meter ($\mu g/m^3$) for lead, 0.050 $\mu g/m^3$ for arsenic, and 0.12 $\mu g/m^3$ for PM_{10}.

PCB samples will be analyzed by U.S. EPA Method TO-10A. The expected limits of detection are 0.75 µg/PUF cartridge; using a low flow pump at a minimum flow rate of 5.0 Lpm for an 8-hour workday equates to a detection limit of approximately 0.31 $\mu g/m^3$. VOC samples will be analyzed by U.S. EPA Method TO-15 using medium level reporting limits. The expected limits of detection will be less than 0.015 micrograms per liter (µg/L) for the VOCs.

Samples will be analyzed with a standard laboratory turnaround time of 5 to 15 working days. Including time for sample shipment to the laboratory, sampling results will generally be available 7 to 15 working days after sample collection.

Background air sampling will be conducted 3 days prior to any dust-generating activities to evaluate background concentrations of PM_{10}, arsenic, and lead in ambient air in and around the work area and to confirm that the sampling equipment is fully operational. Background air sampling also will be conducted 3 days prior to demolition of concrete and excavation in areas of VOC-affected soil. A summary of the air monitoring methods, detection limits, and action levels for real-time data collection for fugitive dust and VOCs is shown in Table 1. A summary of laboratory-based analyses, detection limits, and action levels for chemical-based COPCs and PM_{10} is shown in Table 2. Action levels are discussed further in Section 5.

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality assurance/quality control (QA/QC) procedures will be followed during implementation of this Plan to ensure consistent data collection and analytical procedures and to ensure that the data are representative of Site conditions. QA/QC procedures will be implemented to ensure correct operation of the monitoring/sampling equipment, and to review the analytical data. The QA/QC procedures are discussed in the Quality Assurance Project Plan (QAPP) (Geomatrix, 2007).

4.1 EQUIPMENT CALIBRATION AND MAINTENANCE

Manufacturer's specifications and operations manuals for each of the air monitoring devices will be used during the perimeter air monitoring program. Calibration and maintenance procedures are summarized below.

4.1.1 Meteorological Monitoring Station

A Met One meteorological monitoring system consisting of AutoMet sensor, datalogger and 3-meter tripod stand will be set up and wired according to manufacturer's instructions. Wind direction, wind speed, temperature, relative humidity, barometric pressure and rainfall will be electronically logged over 15 minute averaging periods for the duration of the work day. The logged data will be downloaded at the end of each work day. Calibration of the sensors is done annually by the equipment rental company in accordance with the manufacturer's recommendations. The meteorological monitoring station will be located at the northeast corner of the Site, where electrical power will be available, but away from contractor activities.

4.1.2 PQ-100/200 Air Sampler

The PQ-100/200 sampler will be assembled and programmed according to the manufacturer's manual. Target flow rates will be calibrated prior to deployment for each sampling day. Flow rates will be verified on a daily basis using a DeltaCal or TriCal flow meter to verify the absence of air leaks.

PQ-100/200 samplers used for collection of airborne samples will be programmed with a target flow rate of 16.7 Lpm. New 47 mm Teflon filters will be placed in the filter assembly at the beginning of each day. Filters placed in the PM_{10} samplers will be pre-weighed at the laboratory. Start time, stop time, and flow rates will be recorded in the daily field notes for each sampler.

4.1.3 pDR-1000 Dust Sampler

Continuous monitoring for dust will be implemented during periods of active demolition, crushing and excavation work at the Site. Three hand-held pDR-1000 MiniRAMs will be deployed along with PQ-100/200 samplers to monitor real time dust concentrations at one upwind location and two downwind locations. Each pDR-1000 will be calibrated by the manufacturer at the beginning of the project and will be zeroed every morning before deployment.

4.1.4 Photoionization Detector

A hand-held photoionization detector (MiniRAE 2000) will be used to check concentrations of VOCs at the downwind locations every half hour, or more frequently as deemed necessary by the supervising engineer, during active demolition or excavation work at the Site in VOC-affected soil areas. The PID will be calibrated every morning using fresh air and 50 part per million (ppm) hexane prior to data collection.

4.2 SAMPLE HANDLING AND CUSTODY REQUIREMENTS

A chain-of-custody (COC) will be prepared for samples collected each day and will include the project number, sample date, sample numbers, sample volume, analyses requested, and the sampler's signature as described in the QAPP (Geomatrix, 2007). Samples and the original COC will be shipped to the laboratory using an overnight courier service, with consideration of holding times, sample temperature requirements, and weekend sample receipts at a designated laboratory. Samples also may be picked up at the Site by the laboratory. Copies of the COC will be kept with the daily field notes. Holding times for air monitoring samples are as follows:

- PM_{10}, arsenic and Pb – PQ-100/200 samplers have a 6-month holding time from sample collection to analysis. No sample preservation is necessary.
- VOCs – Summa™ canisters have a 30-day holding time from sample collection to analysis. No sample preservation is necessary.
- PCBs – PUF cartridge samples need to be extracted by the laboratory within 7 days of sample collection and analyzed within 40 days after sample extraction. Sample preservation includes storing samples in a chilled environment at 4 degrees Celsius.

For samples requiring temperature preservation, a temperature blank will be clearly labeled and placed in the cooler along with samples.

4.3 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

A field blank consisting of unused filter media will be shipped to the laboratory along with other samples and analyzed to check for contamination during media preparation or field procedures. At least one field blank per month will be analyzed for each type of sampling media (i.e., filters, PUF samplers, and Summa™ canisters).

5.0 ACTION LEVELS

Air monitoring action levels have been developed for the Site for two general categories of sampling as follows:

- Real-time qualitative data collection via hand-held instruments to monitor for fugitive dust and VOC emissions to determine daily effectiveness of contractor's engineering controls and other mitigation measures; and

- Laboratory-based analyses for site-specific chemicals and PM_{10} action levels to document Site perimeter air quality conditions based on quantitative confirmation sample results.

The applicable Site-specific real-time and chemical-based action levels for each of the COPCs are further described below and presented on Tables 1 and 2.

5.1 REAL-TIME FUGITIVE DUST AND VOC MONITORING

The criteria used to develop action levels for fugitive dust potentially containing Site COPCs, and VOC emissions are described below.

5.1.1 Fugitive Dust

The action level for PM_{10} particulates is 50 µg/m^3, based on the California ambient air quality standard and as specified in SCAQMD Rule 403. PCBs in ambient air can be caused by dusts generated from PCB-impacted soil or concrete during below grade work. Therefore, a PCB dust-related action level as a function of PM_{10} was developed using the maximum PCB concentration of 3,300,000 micrograms per kilogram (µg/kg) measured in soil or concrete at the Site. This PCB action level was developed to monitor real-time dust concentrations for the potential to exceed the PCB chemical action level. The potential dust concentration generated from the below grade work should not exceed 420 µg/m^3, which is the perimeter dust action level developed for PCBs.

Site-specific dust-related action levels as a function of PM_{10} also were developed for lead (4,000 µg/m^3) and arsenic (940 µg/m^3) for consideration during fugitive dust monitoring. The lead action level considers the maximum measured lead concentration of 74,000 µg/kg in soil at the Site. A perimeter action level was developed for arsenic similar to PCBs, and was based on dust using the maximum arsenic concentration of 120,000 µg/kg measured in soil at the site and the arsenic action level. The potential dust concentration generated from the below grade work should not exceed 940 µg/m^3, which is the perimeter dust action level developed for arsenic.

The action level for PM_{10} is the most stringent when compared to the dust action levels for PCBs, Pb and As. Therefore, the action level for PM_{10} will be the action level employed during real-time fugitive dust monitoring. A miniRAM will be used to measure dust emissions during the contractor's performance of certain work tasks. If MiniRAM data indicate a dust concentration of 50 µg/m^3 above background dust levels is present due to contractor activity, the Engineer will stop work and the appropriate additional engineering controls for dust will be implemented by the contractor. Dust mitigation measures are further described in Section 5.3.

5.1.2 VOCs

The Site-specific action level for VOC concentrations is 5 ppm_v as n-hexane. A hand-held PID will be used to monitor VOC concentrations at the downwind locations near the perimeter while below-grade work is conducted in VOC-impacted areas. If the PID concentration exceeds 5 ppm (calibrated to hexane), work will stop and controls for vapor suppression will be implemented by the contractor. It is worthwhile to mention that the Site-specific HASP requires breathing zone monitoring for worker safety and SCAQMD Rule 1166 monitoring during certain excavation activities; action levels from the HASP applicable to the construction worker breathing zone will take precedence over this perimeter monitoring plan should any conflict arise among monitoring action levels. Vapor and odor mitigation measures are further described in Section 5.3.

Table 1 includes a summary of the real-time monitoring action levels for this project.

5.2 LABORATORY-BASED CHEMICAL MONITORING AND MINIMUM RISK LEVELS

Chemical action levels have been developed for Site COPCs based on the applicable regulatory standards which include the California ambient air quality standard specified in SCAQMD Rule 403 for PM_{10}, California Air Resources Board's (CARB's) Risk Management Guidelines for New, Modified, and Existing Sources of Lead (March 2001), minimum risk levels (MRLs) published by the Agency for Toxic Substances Disease Registry (ATSDR) for substances such as TCE, PCE, and TMB; that are commonly found at Superfund sites, or other regulatory screening criteria if MRLs were not available.

An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse health effects over a specified duration of exposure (chronic, intermediate, and acute). MRLs are based on non-cancer health effects for the most sensitive health effects for the specific route of exposure. MRLs have been developed for acute (1 to 14 days), intermediate (15 to 365 days), and chronic exposure (more than 365 days). For this monitoring program for a duration of approximately 5 months, intermediate MRLs will be used unless unavailable, in which case chronic MRLs will be used.

The action levels and applicable regulatory standards are further described below.

5.2.1 PCBs

PCBs are non-volatile and the chemical action level for PCBs is 1.4 μg/m^3. The chemical action level of 1.4 μg/m^3 for PCBs is based on the regional screening level (RSL) for carcinogenic commercial/industrial inhalation exposure published by U.S. EPA (U.S. EPA, 2010) adjusted for exposure representative of the project duration. The industrial RSL is based on carcinogenic effects over 25 years of exposure for 50 weeks per year. For a short-term project such as this, the duration of exposure is significantly lower; therefore, the RSL is adjusted (increased) for the expected project duration (20 weeks out of 50 weeks and 1 year out of 25 years) to be more representative of potential off-site exposure during the project. An MRL for inhalation of PCBs was not available.

5.2.2 PM_{10} for Fugitive Dust

The action level for PM_{10} particulates will be 50 μg/m^3 based on the California ambient air quality standard and as specified in SCAQMD Rule 403.

5.2.3 VOCs

The chemical action levels for TCE, PCE and TMB are based on MRLs published by the ATSDR for substances that are commonly found at Superfund sites. The action level for PCE will be 0.27 μg/L, which is the MRL for chronic exposure (ATSDR, 2009) since an MRL for intermediate exposure has not been published. The action level for TCE will be 0.54 μg/L, which is the MRL for intermediate exposure. The action level for benzene will be 0.019 μg/L, which is the MRL for intermediate exposure. An MRL for inhalation of 1,2,4-TMB and 1,3,5-TMB was not available. The action level for 1,2,4-TMB and 1,3,5-TMB will be 0.31 μg/L based on 10 times the regional screening level for 1,2,4-TMB for chronic commercial/industrial exposure published by U.S. EPA (U.S. EPA, 2010). The chronic exposure level is based on non-carcinogenic effects over 25 years of exposure. For a short-term project such as this, the duration of exposure is significantly lower, corresponding to the 10-fold higher allowable concentration in air.

5.2.4 Lead and Arsenic

The chemical action level for lead will be 0.3 μg/m^3 based on the CARB's Risk Management Guidelines for New, Modified, and Existing Sources of Lead (March 2001). This lead level is applied as a 30-day average, but for the purpose of this Plan it will be used as an action level. This lead level is the acceptable concentration of lead in air for an area with average exposure to lead based on scenarios (house age and income level) as described in the guidelines. The Pb action level is based on shorter term exposure (30-day average) and is therefore not adjusted by the exposure factors used for the chronic exposure limits.

The chemical action level for arsenic is 0.11 µg/m^3. An MRL for inhalation of arsenic was not available. A chemical action level of 0.11 µg/m^3 was developed for chronic noncancer exposure by adjusting the Reference Exposure Limit (REL) published by the Office of Environmental Health Hazard Assessment (OEHHA, 2010) by adjusting for exposure representative of the project duration. The chronic REL is based on continuous (24 hours per day) and chronic exposure. Therefore, the REL is adjusted (increased) for the expected project duration (20 weeks out of 50 weeks) and work day (8 out of 24 hours) to be more representative of potential off-site exposure during the project. Table 2 provides a summary of the action levels for this project.

5.3 MITIGATION MEASURES

The following mitigation measures will be implemented if real-time monitoring for fugitive dust and VOCs exceed Site-specific action levels, or if the engineer observes visible dust emissions at the Site boundary.

For dust mitigation, the following activities will be implemented:

- Apply water spray or mist during activities such as concrete crushing and stockpile management to minimize the generation of visible dust;
- Have a water supply available continuously;
- Cover soil stockpiles;
- Keep the drop heights to a minimum, during the handling of materials or loading of transportation vehicles;
- Keep vehicle speeds on the property below 5 miles per hour; and
- Reduce the pace of work.

For VOCs that exceed action levels, the following activities will be implemented:

- Cover subject soil with clean soil or plastic sheeting;
- Reduce the pace of work;
- Reduce size of area being excavated; and/or
- Apply vapor suppression.

The contractor will be responsible to employ appropriate dust and odor control measures during demolition and remediation activities to prevent airborne dust or odors from leaving the Site property boundary, in accordance with SCAQMD regulations and Section 01501 of Below Grade Demolition and Soil Excavation Construction Documents. The Engineer will evaluate the conditions at the time of demolition and determine adequacy of dust or odor control measures as based on real-time monitoring. Demolition procedures or dust and odor control measures may have to be altered based on the Engineer's observations of the effectiveness of such measures. The Engineer has the authority to stop work until such measures are improved or additional or more effective measures are employed. The Engineer will check real time wind speed and direction from both the on-site meteorological station and internet sources during periods of active construction and may stop work when wind speed exceeds 10 miles per hour at the Site. Additional air monitoring may be conducted to confirm the effectiveness of emission reduction activities.

6.0 DOCUMENTATION AND REPORTING

A daily record of significant events and observations during the perimeter sampling will be recorded on daily field notes. Periodic notation of meteorological measurements will be recorded on the Meteorological Monitoring Form. Periodic checks of the flow rate readings on the PQ-100/200 samplers will be recorded on the Air Sampling Forms.

A final written report of the Perimeter Air Monitoring Program will be prepared. This report will include a discussion of sampling methods and procedures, evaluation of the results, calibration and quality control information, and copies of field sampling forms and laboratory reports with COC records.

7.0 REFERENCES

Agency for Toxic Substance Disease Registry (ATSDR), 2009, Minimal Risk Levels (MRLs), December, http://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls_december_2009.pdf

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TABLES

TABLE 1

REAL-TIME PERIMETER AIR SAMPLING METHODS AND SITE-SPECIFIC ACTION LEVELS

Former Pechiney Cast Plate, Inc. Facility
Vernon, California

Parameter and Equipment	Method Detection Limit[1]	Frequency and Location	Estimated Number of Sampling Days	Site-Specific Action Levels
Particulate matter less than 10 microns (PM_{10}) Personal DataRAM (pDR – 1000, MiniRAM)	0.1 µg/m^3	One upwind and two downwind locations[2] every half an hour on a work day, 5 days per week during demolition[3] and soil remediation.	3 background 5 per week for 5 months	50 µg/m^3 over background dust level[4]
Lead and Arsenic Personal DataRAM (pDR – 1000) for real-time monitoring of perimeter dust action level developed for lead and arsenic.	0.1 µg/m^3	One upwind and two downwind locations[2] every half an hour on a work day, 5 days per week during demolition[3] and soil remediation.	3 background 5 per week for 5 months	4,000 µg/m^3 for lead, 940 µg/m^3 for arsenic[5]
Polychlorinated Biphenyls (PCBs) Personal DataRAM (pDR – 1000) for real-time monitoring of perimeter dust action level developed for PCBs.	0.1 µg/m^3	One upwind and two downwind locations[2] every half an hour on a work day, 5 days per week during demolition[3] and soil remediation.	3 background 5 per week for 5 months	420 µg/m^3 for PCBs[5]
Volatile Organic Compounds (VOCs) Photoionization Detector (PID) (MiniRAE 2000) for real-time monitoring of VOC concentrations.	0.1 ppm$_v$	Two downwind locations[2] every half an hour on a work day, 5 days per week during soil remediation in VOCs areas.	3 background 5 per week for 4 months	5.0 ppm$_v$ of VOCs (calibrated to hexane)

Notes:

1. µg/m^3 = micrograms per cubic meter; ppm$_v$ = parts per million by volume.
2. Upwind and downwind locations will be moved during Site activities to the western and eastern perimeters closest to actual field activities. Monitoring will be conducted by hand-held field meters/instruments.
3. Demolition includes former building slabs and below grade structures. Above-grade buildings were demolished down to slab grade in 2006.
4. The action level for real-time fugitive dust monitoring will be based on the PM_{10} value of 50 µg/m^3, as this value is more stringent than the PM_{10} equivalent levels for lead, arsenic, and PCBs.
5. PM_{10} equivalent levels for lead, arsenic, and PCBs.

TABLE 2

TIME-INTEGRATED PERIMETER AIR SAMPLING METHODS AND CHEMICAL-SPECIFIC ACTION LEVELS

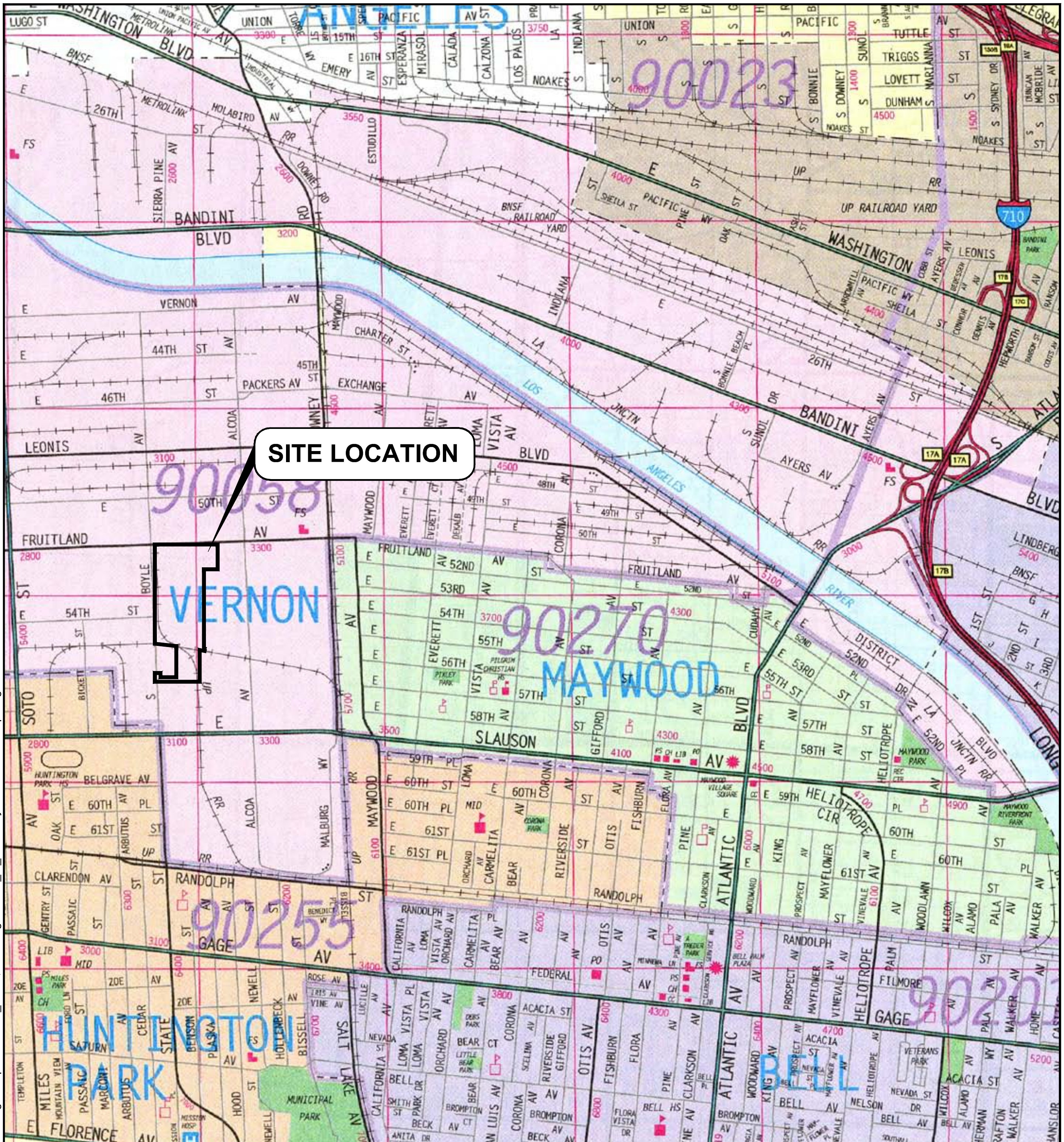
Former Pechiney Cast Plate, Inc. Facility
Vernon, California

Parameter and Equipment	Laboratory Analytical Method (Method Detection Limit)	Frequency and Location	Estimated Number of Sampling Days	Chemical Action Levels
Particulate matter less than 10 microns (PM_{10}) PQ-100/200 samplers with PM-10 inlet using pre-weighed 47 mm diameter Teflon filters.	NIOSH 0500 for particulate weight (1 µg/filter or about 0.12 µg/m^3)	One upwind and two downwind locations[1] at least once per week during demolition[2] and soil remediation.	3 background 1 per week for 5 months	50 µg/m^3
Lead and Arsenic PQ-100/200 samplers using 47 mm diameter Teflon filters.	NIOSH 7300 for lead (0.2 µg/filter or about 0.025 µg/m^3) NIOSH 7300 for arsenic (0.4 µg/filter or about 0.050 µg/m^3)	One upwind and two downwind locations[1] at least once per week during demolition[2] and soil remediation.	3 background 1 per week for 5 months	0.3 µg/m^3 for lead 0.11 µg/m^3 for arsenic
Polychlorinated Biphenyls (PCBs) Polyurethane foam (PUF) cartridge.	TO-10A for PCBs (0.75 µg/cartridge or about 0.31 µg/m^3)	One upwind and two downwind locations[1] at least once per week during demolition[2] and soil remediation in PCB areas.	3 background 1 per week for 5 months	1.4 µg/m^3 for PCBs
Volatile Organic Compounds (VOCs) Summa™ canister with regulator for 10-hour work day.	TO-15 for tetrachloroethene (PCE), trichloroethene (TCE), benzene, 1,2,4-trimethylbenzene (1,2,4-TMB), and 1,3,5-TMB (approximately 0.015 µg/L)	One upwind, one crosswind, and two downwind locations[1] at least once per week during soil remediation in VOC areas.	3 background 1 per week for 4 months	PCE – 0.27 µg/L TCE – 0.54 µg/L Benzene – 0.019 µg/L 1,2,4-TMB – 0.31 µg/L 1,3,5-TMB – 0.31 µg/L

Notes:

1. Upwind and downwind locations will be moved during Site activities to the western and eastern perimeters closest to actual field activities. Downwind samplers will be placed at least 200 feet apart.
2. Demolition includes former building slabs and below grade structures. Above-grade buildings were demolished down to slab grade in 2006.
3. µg/m^3 = micrograms per cubic meter; ppm_v = parts per million by volume; mm = millimeter; µg/L = micrograms per liter.

FIGURES



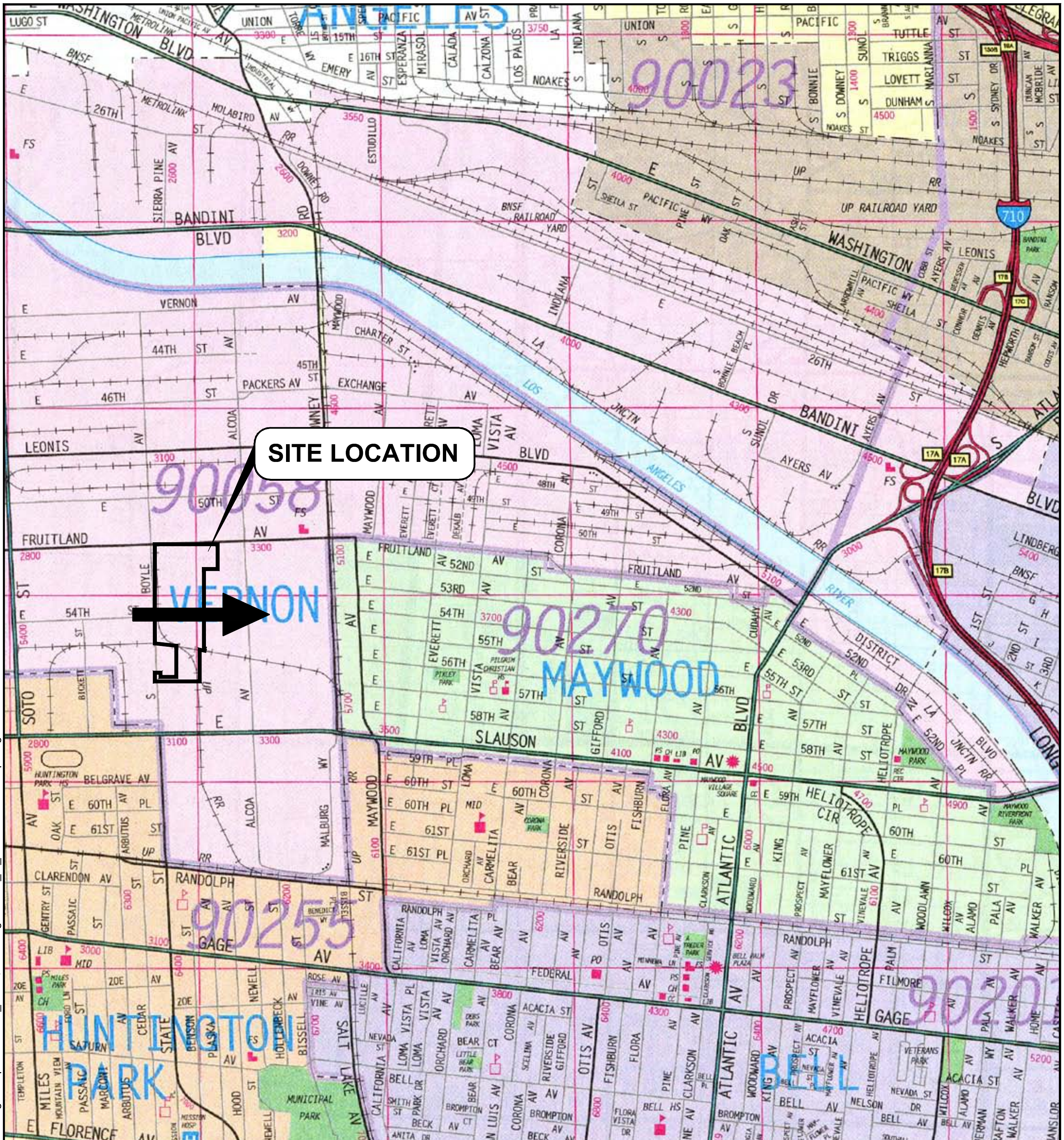
0 1000 2000

Approximate Scale in Feet

SITE LOCATION MAP
Former Pechiney Cast Plate, Inc. Facility
3200 Fruitland Avenue
Vernon, California

By: pah	Date: 10/28/11	Project No. 10627.003.0
amec		Figure 1

Plot Date: 10/27/11 - 10:18am, Plotted by: pat.herring
Drawing Path: C:\Documents and Settings\pat.herring\local settings\temp\AcPublish_4504\ Drawing Name: _tb_PechineyPlateLocationMap.dwg

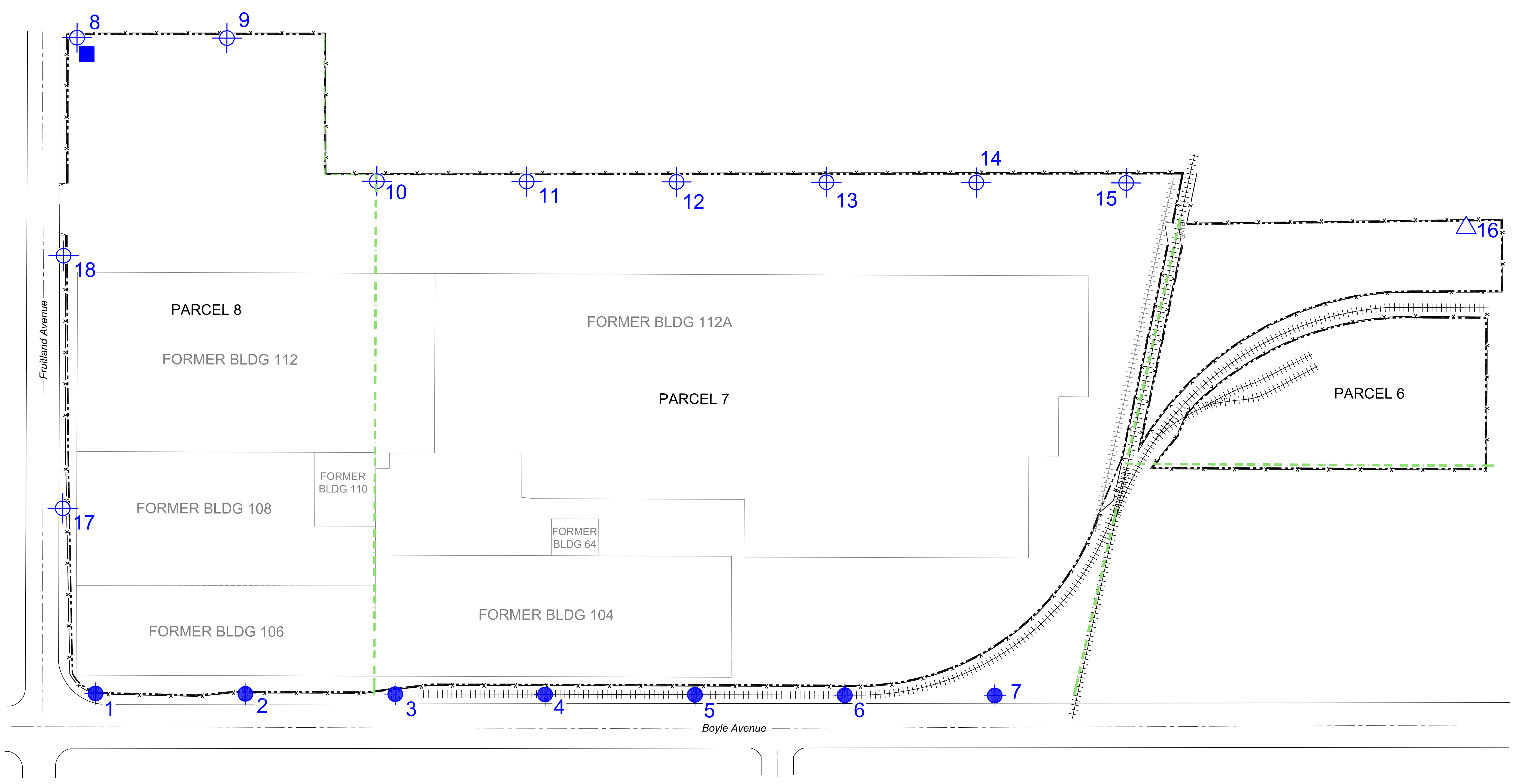


0 1000 2000
Approximate Scale in Feet

PREDOMINANT WIND DIRECTION
IN THE SITE VICINITY
FOR SPRING AND SUMMER DAYTIME
Former Pechiney Cast Plate, Inc. Facility
3200 Fruitland Avenue
Vernon, California

By: pah	Date: 10/28/11	Project No. 10627.003.0
amec		Figure 2

Plot Date: 10/27/11 - 10:15am, Plotted by: pat.herring
Drawing Path: C:\Documents and Settings\pat.herring\local settings\temp\AcPublish_4504\, Drawing Name: _tb_WindDirectionMap.dwg



Explanation

- 1 Upwind sample location
- 18 Downwind sample location
- 16 Crosswind sample location
- Meteorological monitoring station
- Site boundary
- Railroad Track
- Chain link fence
- Parcel boundary

0 70 140
Approximate Scale in Feet

Basemap modified from Pechiney Cast Plate, Inc. Site Plan dated January 9, 2002; Geraghty & Miller, Inc. "Groundwater Elevation and Volatile Organic Compound Concentrations December 8, 1994" figure dated February 2; 1995, Aluminum Company of America "Works General-MPA" figure dated October 10, 1984; and Los Angeles County Assessor's Office Parcel Map 6310/Sheet 8, dated November 5, 1958.

PROPOSED AIR MONITORING LOCATIONS
Former Pechiney Cast Plate, Inc. Facility
Vernon, California

By: pah	Date: 10/28/11	Project No. 10627.003
amec		Figure 3

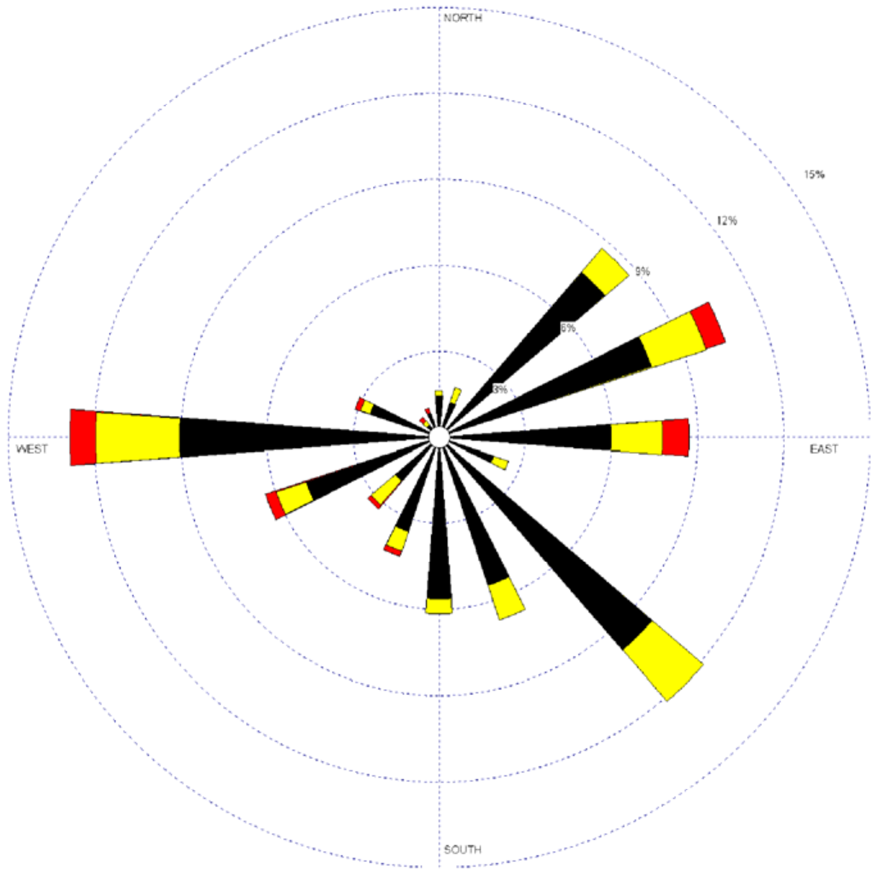
Plot Date: 10/27/11 - 10:20am, Plotted by: pat.herring
Drawing Path: Y:\10627.003.0\acad\Reports_2011\Air Monitoring\, Drawing Name: tb_Proposed Air Monitoring Locations.dwg, Figure 3-Proposed Air Monitoring Locations (2)

APPENDIX A

Wind Rose Diagrams

WIND ROSE PLOT

Station #52132 - ,



Wind Speed (Knots) > 21 17 - 21 11 - 16 7 - 10 4 - 6 1 - 3	MODELER	DATE **11/9/01**	COMPANY NAME
	DISPLAY **Wind Speed**	UNIT **Knots**	COMMENTS
	AVG. WIND SPEED **3.18 Knots**	CALM WINDS **9.24%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1981** **Mar 1 - May 31** **Midnight - 5 AM**	PROJECT/PLOT NO.

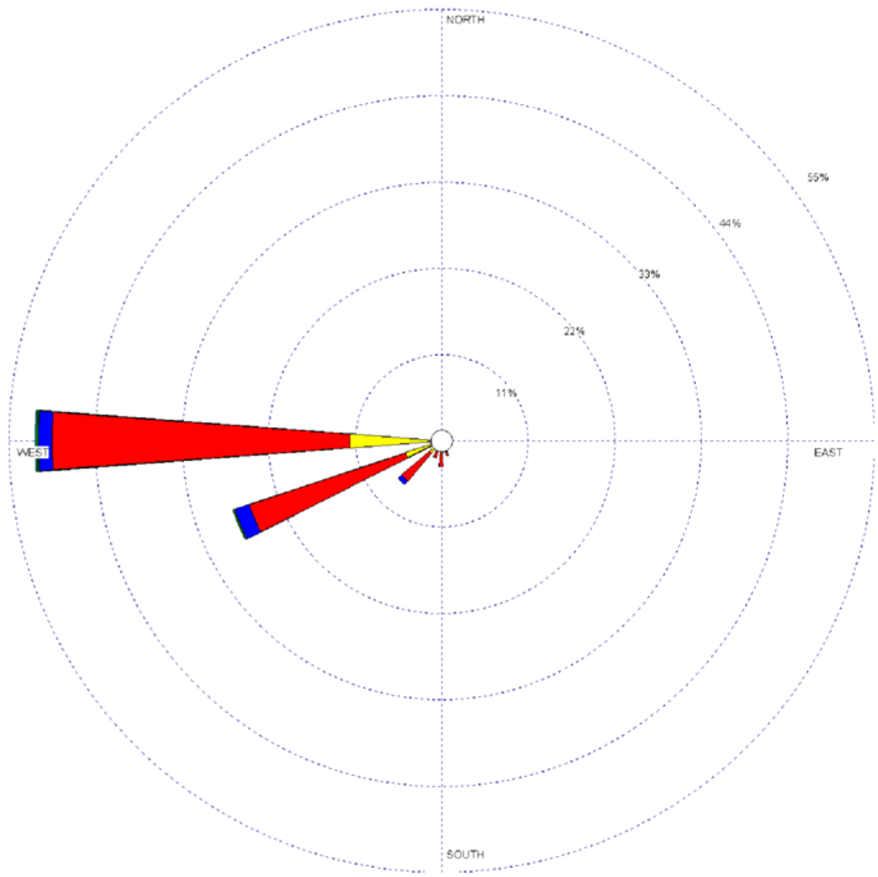
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

PARSONS

Figure 8.1-5
Wind Rose Plot (Spring - AM)
Malburg Generating Station
Vernon, California

WIND ROSE PLOT

Station #52132 - ,



Wind Speed (m/s)			
> 11.06 8.49 - 11.06 5.40 - 8.49 3.34 - 5.40 1.80 - 3.34 0.51 - 1.80	MODELER	DATE **11/9/01**	COMPANY NAME
	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **4.01 m/s**	CALM WINDS **0.16%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1981** **Mar 1 - May 31** **1 PM - 7 PM**	PROJECT/PLOT NO.

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

PARSONS

Figure 8.1-6

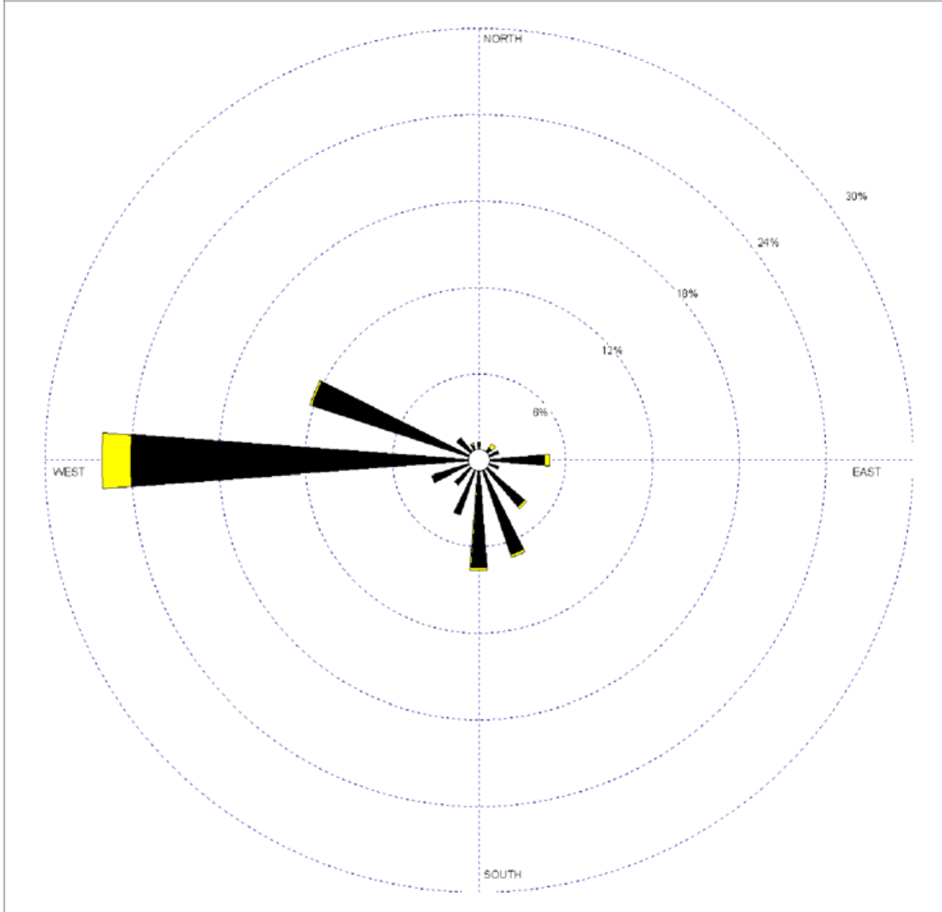
Wind Rose Plot (Spring - PM)

Malburg Generating Station

Vernon, California

WIND ROSE PLOT

Station #52132 - ,



Wind Speed (m/s)			
> 11.06	MODELER	DATE **11/9/01**	COMPANY NAME
8.49 - 11.06	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
5.40 - 8.49	AVG. WIND SPEED **1.29 m/s**	CALM WINDS **18.48%**	
3.34 - 5.40 1.80 - 3.34 0.51 - 1.80	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1981** **Jun 1 - Aug 31** **Midnight - 5 AM**	PROJECT/PLOT NO.

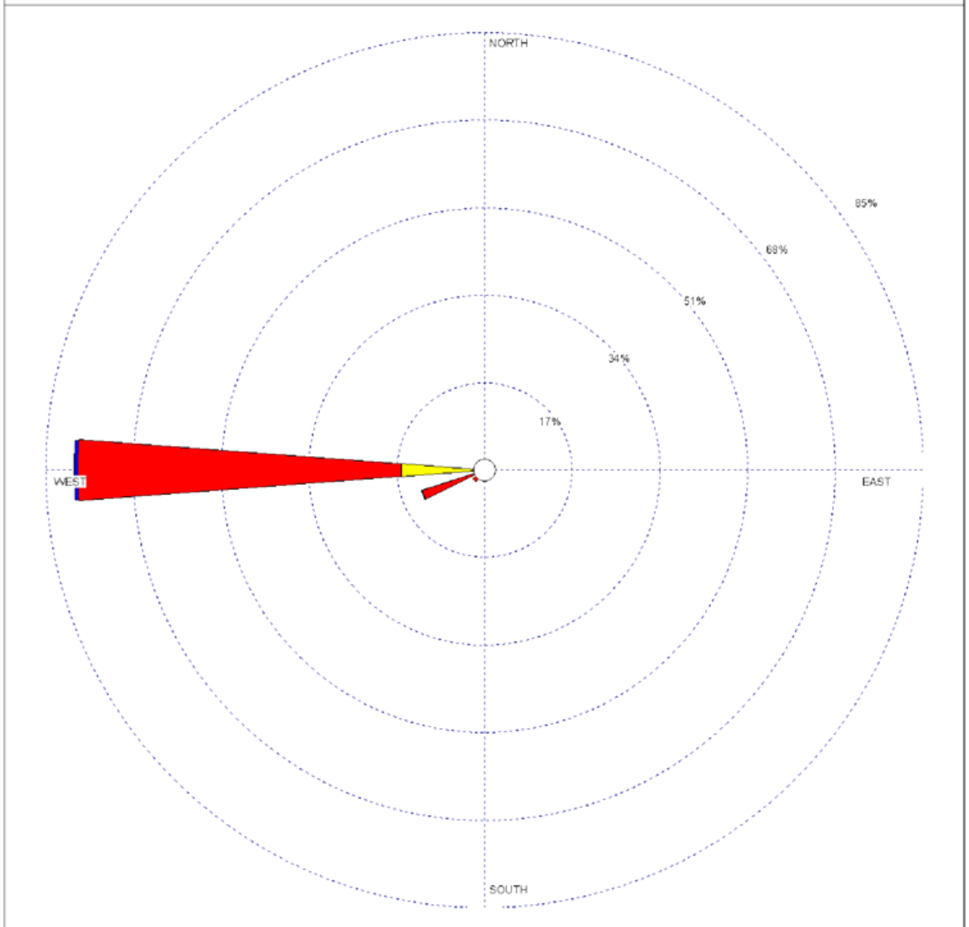
WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

PARSONS

Figure 8.1-7
Wind Rose Plot (Summer - AM)
Malburg Generating Station
Vernon, California

WIND ROSE PLOT

Station #52132 - ,



Wind Speed (m/s)	MODELER	DATE	COMPANY NAME
> 11.06		**11/9/01**	
8.49 - 11.06	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
5.40 - 8.49	AVG. WIND SPEED **3.82 m/s**	CALM WINDS **0.00%**	
3.34 - 5.40			
1.80 - 3.34	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1981 Jun 1 - Aug 31 1 PM - 7 PM**	PROJECT/PLOT NO.
0.51 - 1.80			

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

PARSONS

Figure 8.1-8

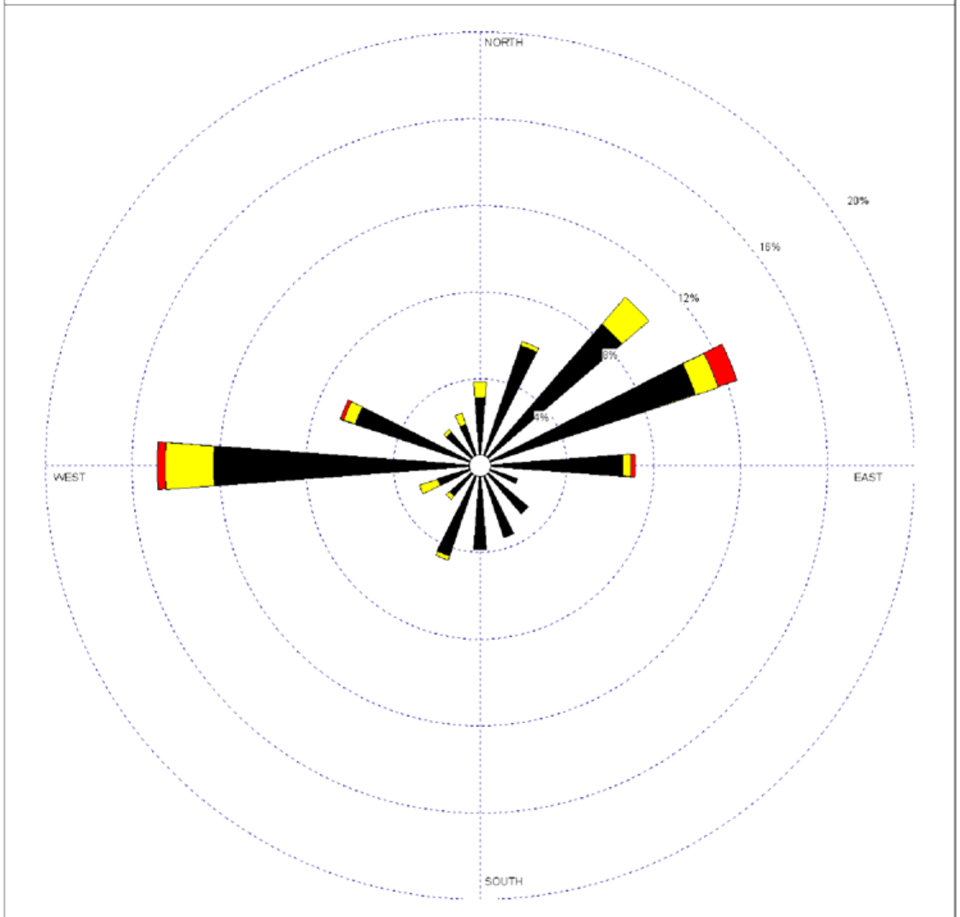
Wind Rose Plot (Summer - PM)

Malburg Generating Station

Vernon, California

WIND ROSE PLOT

Station #52132 - ,



Wind Speed (m/s)

- > 11.06
- 8.49 - 11.06
- 5.40 - 8.49
- 3.34 - 5.40
- 1.80 - 3.34
- 0.51 - 1.80

MODELER	DATE **11/9/01**	COMPANY NAME
DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
AVG. WIND SPEED **1.47 m/s**	CALM WINDS **12.27%**	
ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1981** **Sep 1 - Nov 30** **Midnight - 5 AM**	PROJECT/PLOT NO.

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PARSONS

Figure 8.1-9

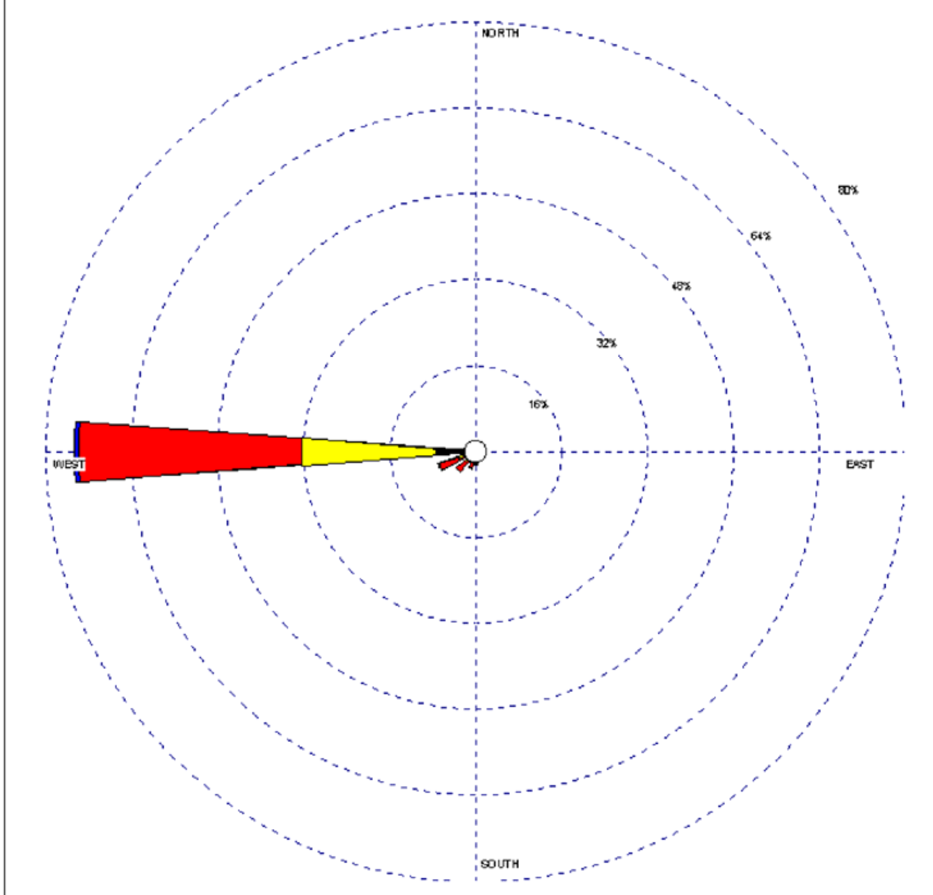
Wind Rose Plot (Autumn - AM)

Malburg Generating Station

Vernon, California

WIND ROSE PLOT

Station #52132 - ,



Wind Speed (Knots)			
> 21	MODELER	DATE 12/15/01	COMPANY NAME
17 - 21	DISPLAY Wind Speed	UNIT Knots	COMMENTS
11 - 16	AVG. WIND SPEED 6.49 Knots	CALM WINDS 1.10%	
7 - 10	ORIENTATION Direction (blowing from)	PLOT YEAR-DATE-TIME 1981 Sep 1 - Nov 30 1 PM - 7 PM	PROJECT/PLOT NO.
4 - 6			
1 - 3			

PARSONS

Figure 8.1-10

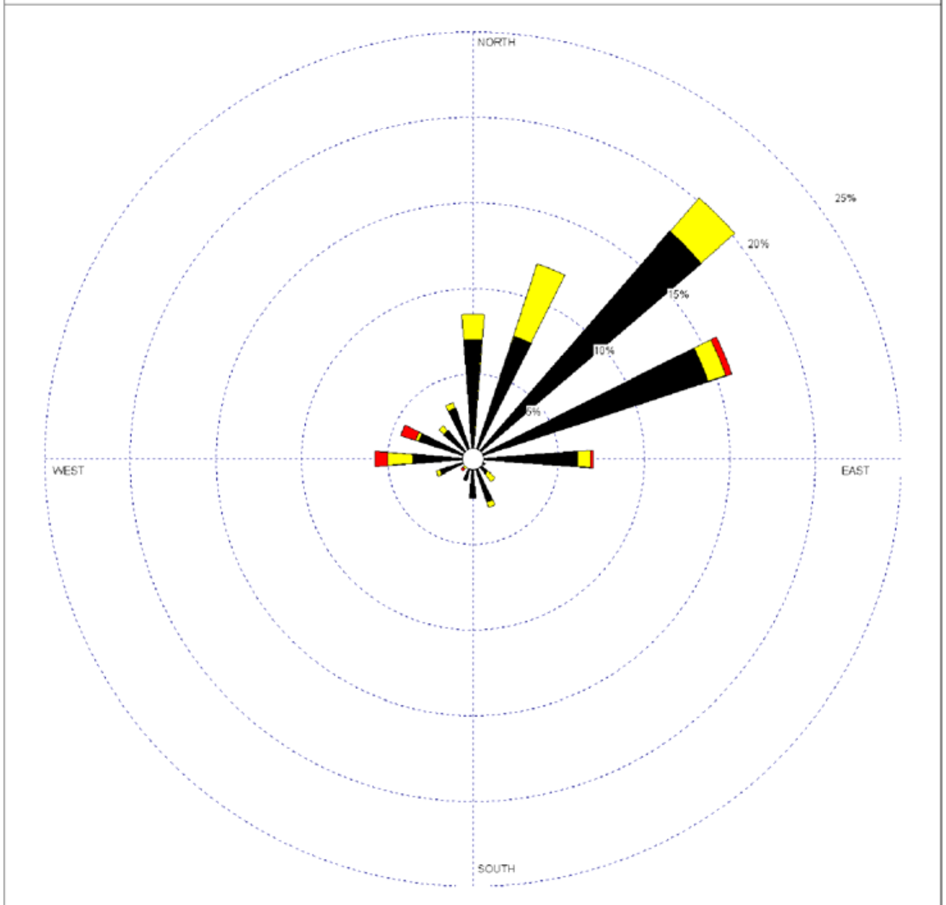
Wind Rose Plot (Autumn - PM)

Malburg Generating Station

Vernon, California

WIND ROSE PLOT

Station #52132 - ,



Wind Speed (m/s)			
> 11.06 8.49 - 11.06 5.40 - 8.49 3.34 - 5.40 1.80 - 3.34 0.51 - 1.80	MODELER	DATE **11/9/01**	COMPANY NAME
	DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
	AVG. WIND SPEED **1.56 m/s**	CALM WINDS **7.96%**	
	ORIENTATION **Direction (blowing from)**	PLOT YEAR-DATE-TIME **1981** **Check Date Range Report** **Midnight - 5 AM**	PROJECT/PLOT NO.

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

PARSONS

Figure 8.1-11

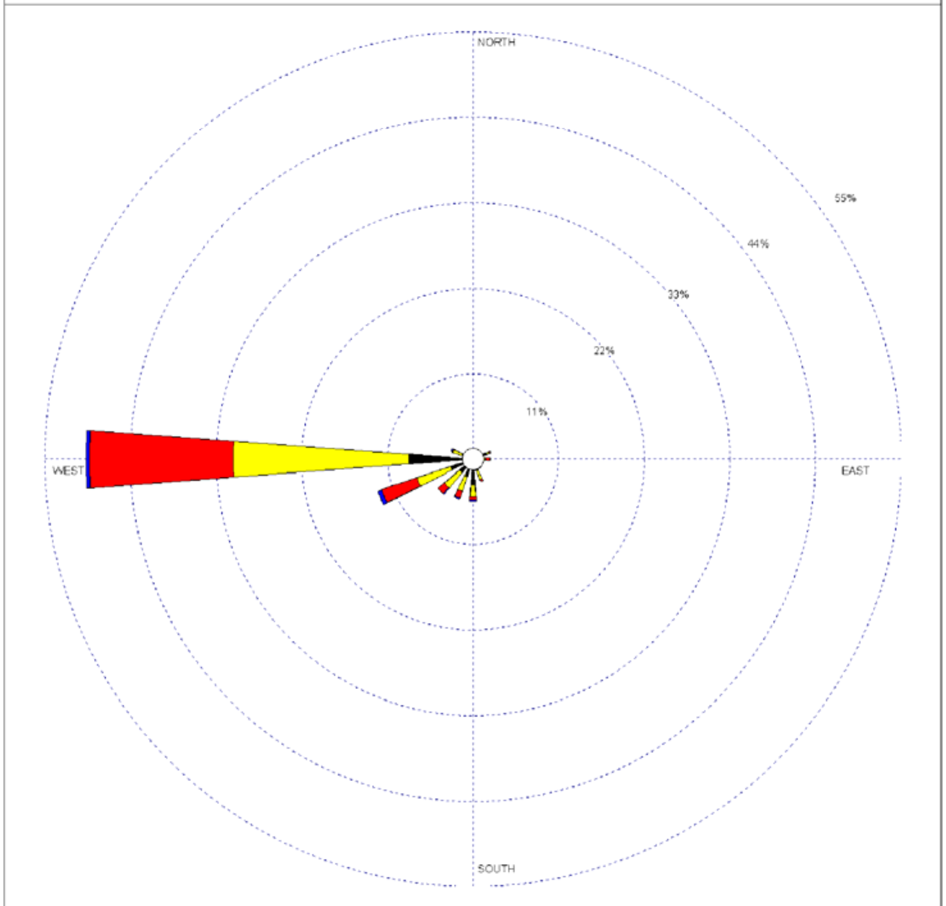
Wind Rose Plot (Winter - AM)

Malburg Generating Station

Vernon, California

WIND ROSE PLOT

Station #52132 - ,



Wind Speed (m/s)

- > 11.06
- 8.49 - 11.06
- 5.40 - 8.49
- 3.34 - 5.40
- 1.80 - 3.34
- 0.51 - 1.80

MODELER	DATE **11/9/01**	COMPANY NAME
DISPLAY **Wind Speed**	UNIT **m/s**	COMMENTS
AVG. WIND SPEED **2.80 m/s**	CALM WINDS **2.38%**	
ORIENTATION **Direction** **(blowing from)**	PLOT YEAR-DATE-TIME **1981** **Check Date Range Report** **1 PM - 7 PM**	PROJECT/PLOT NO.

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

PARSONS

Figure 8.1-12

Wind Rose Plot (Winter - PM)

Malburg Generating Station

Vernon, California